

Jan. 11, 1938.

C. J. HUEBER

2,104,746

DEVICE FOR ANCHORING INKING RIBBONS TO SPOOLS

Filed June 26, 1935

2 Sheets-Sheet 1

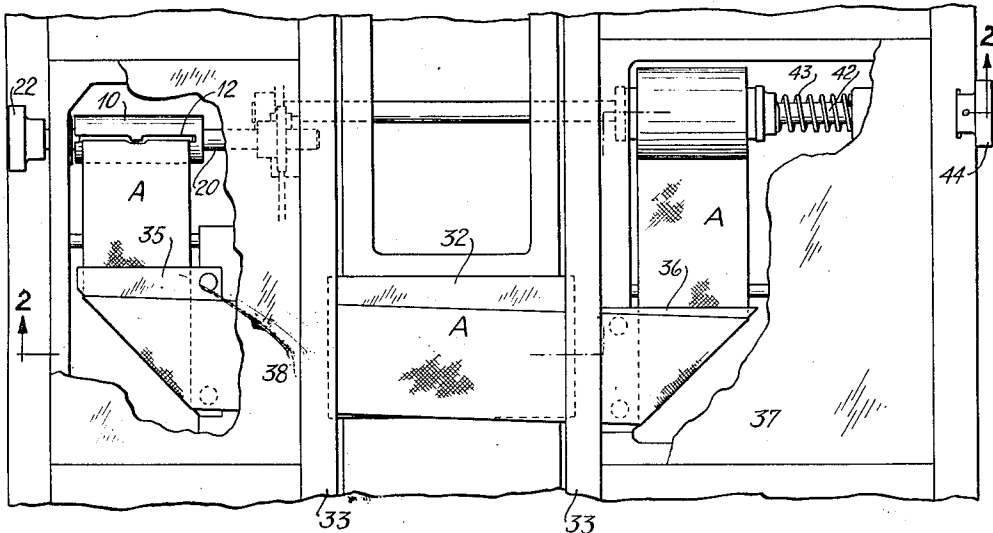


FIG. 1

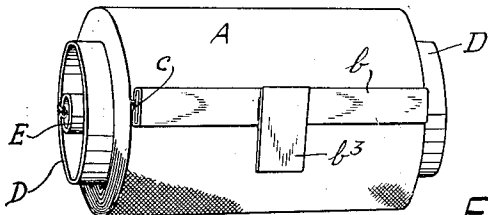


FIG. 12

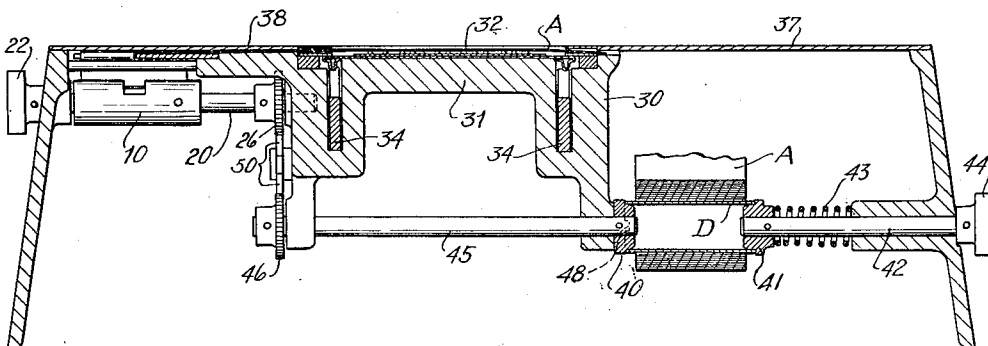


FIG. 2

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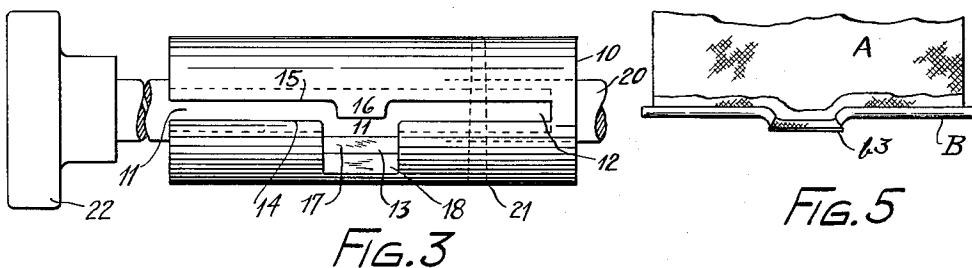
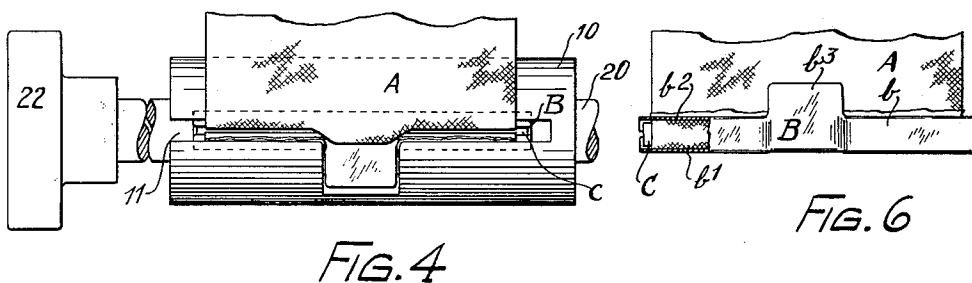
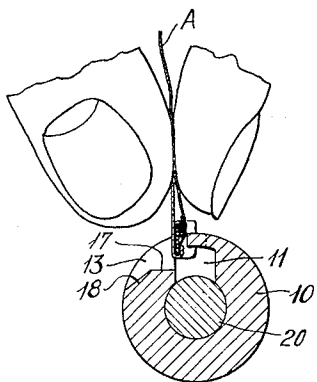


FIG. 7

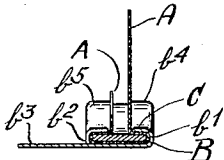


FIG. 9

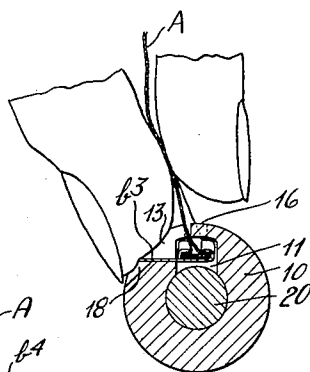


FIG. 8

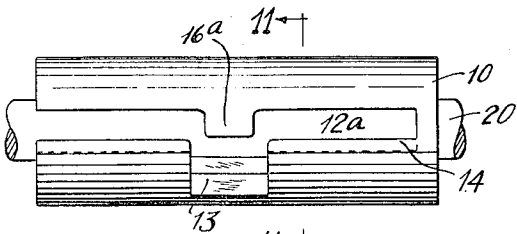


FIG. 10

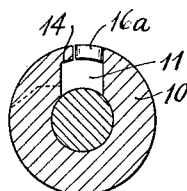


FIG. 11

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## UNITED STATES PATENT OFFICE

2,104,746

DEVICE FOR ANCHORING INKING RIBBONS  
TO SPOOLS

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Application June 26, 1935, Serial No. 28,508

19 Claims. (Cl. 242-74)

This invention is concerned with a ribbon spool and a cooperative device adapted to be attached to an inking ribbon, enabling the ribbon to be effectively anchored to the spool on which the ribbon is to be wound. The invention may be advantageously employed in various types of printing machines, addressing machines, dating devices, etc., where the ink for the impression is supplied by an inked ribbon.

The general object of the invention is to provide a spool and ribbon head so mutually formed that the attachment of the ribbon to the spool may be effected very quickly and will be permanent so long as desired, even though the ribbon be entirely unwound, while such normal anchorage of the ribbon to the spool may be readily released whenever desired.

Another object is to enable the anchorage device automatically to prevent shifting of the ribbon lengthwise of the spool, whereby the necessity for flanges on the spool is avoided.

My invention provides an anchorage device enabling the ready attachment of ribbons to spools located in comparatively inaccessible or not entirely visible places. Thus, in the drawings, I have illustrated the spool mounted in a comparatively confined space, which embodiment is hereinafter specifically described.

In the drawings, Fig. 1 is a plan partly broken away of a portion of an addressing machine employing my ribbon anchorage; Fig. 2 is a vertical section of such machine in the offset plane indicated by the line 2-2 on Fig. 1; Fig. 3 is a view of my ribbon spool adapted for such a machine as shown in Figs. 1 and 2; Fig. 4 is a view similar to Fig. 3 showing a ribbon attached to the spool; Fig. 5 is a view of the end portion of the ribbon with the attaching head thereon in its normal anchoring position; Fig. 6 is a similar view partly broken away and showing the head in the position it occupies while being inserted into the spool; Figs. 7 and 8 are cross-sections of the spool illustrating the ribbon anchorage respectively in its initial and final positions as it is being inserted in the spool; Fig. 9 is a cross-section on a larger scale through the anchoring head when attached to the ribbon; Fig. 10 is a view of a modified form of spool; Fig. 11 is a cross-section of the spool of Fig. 10 in a plane indicated by the line 11-11 on that figure; Fig. 12 is a perspective of the ribbon wound upon a discardable spool, ready for shipping.

In Figs. 1 to 4 inclusive and 7 and 8, my spool is shown as a cylindrical body 10 having formed therein a longitudinal cavity 11 communicating

with the cylindrical exterior by a longitudinal slot 12 and a lateral centrally located notch 13. The longitudinal entrance slot 12 is bounded by cylindrical parts 14 and 15 of the spool, which make ledges over portion of the cavity 11. Directly opposite the lateral notch 13 of the cavity is a lip 16 formed by an extension of the overhanging ledge 15. The base of the notch 13 is formed with an intermediate ridge, that is to say, immediately adjacent the longitudinal cavity 11 such base extends at right angles to the parallel sided walls of the cavity 11, as shown at 17, Fig. 7, and then beyond this the base is inclined as shown at 18. The cavity 11 is shown as leading from one extreme end of the spool well toward the other end.

The spool described is adapted to be mounted on a coaxial shaft 20 and suitably secured thereto, as by a tapered transverse pin, indicated in broken lines at 21 in Fig. 3. The shaft 20 may have a knob 22 by which it can be readily turned.

Permanently attached to the end of the inking ribbon A is the anchoring head of this invention, which projects in each direction from the ribbon, after the manner of the top arms of the letter T. As shown, this head comprises a sheet metal member B embracing and clamping a portion of the ribbon after the same has been looped around the flat narrow metal bar C as shown in Figs. 6 and 9. The member B comprises a longitudinal portion b having side flanges b1 and b2 and having an intermediately located lateral tongue b3 extending from the body portion, the flange on that side being interrupted at the tongue. This flanged or channel shaped member has its central region offset from the plane of the extreme portions and the tongue b3 leads directly from this offset portion, as indicated in Figs. 5 and 6. The internal bar C also has a correspondingly offset central region.

In attaching the anchorage device to the inking ribbon the end portion of the ribbon is looped around the bar C with the offset of the bar projecting away from the general course of the ribbon. Then the channel shaped head B, while its flanges are parallel, is placed over the outer face of the bar C and the extreme edges of the flanges b1 and b2 are turned down onto the ribbon on the other side of the bar C, as illustrated at b4 and b5 in Fig. 9. In this position the ribbon is kinked outwardly between the offset of the bar C and the offset of the base b of the head. The ribbon is thus effectively attached to the anchorage device and cannot pull out of it or shift along it.

In mounting the anchorage device, the tongue **b3** and the adjacent portion of the ribbon are grasped between the operator's thumb and finger so that the attaching device lies parallel to the ribbon, and then the ribbon and head are passed through the slot **12** into the cavity **11**, as illustrated in Fig. 7. When the anchorage device is within the cavity **11**, the operator presses down on the tongue **b3**, bringing the anchorage into the position shown in Fig. 8 in the spool. Thereafter the tension on the ribbon pulls the anchorage device, now transverse of the ledges **14** and **15** against the inner face of such ledges, so that the ribbon is effectively anchored to the spool. The lip **16** of the spool, directly opposite the transverse notch **13**, acts as a fulcrum or guide for the head, enabling it to swing readily into the notch as soon as the operator presses down on the end of the tongue **b3**. When the tongue is located in the lateral cavity it prevents any longitudinal shifting of the ribbon.

It will be seen from Fig. 8 that when the ribbon is seated in the cavity **11** of the spool, the tongue **b3** of the ribbon overhangs the inclined base portion **18** of the notch **13** so that space is provided beneath the tongue in which the operator may insert his finger to tip up the tongue to release the ribbon whenever desired. The anchorage is therefore both attached and released in a very simple and extremely convenient manner.

In Figs. 10 and 11, which illustrate a spool slightly modified from that shown in the preceding figures, I have omitted the ledge **15** of former figures and extended the wall of the cavity **11** directly to the outer surface of the spool, thus making a wider slot **12a** than shown, for instance, in Figs. 3 and 4. In such modification the lip **16a** is correspondingly longer than in Figs. 3 and 4. This wider slot provides more room for the insertion of the ribbon head and relies on the lip **16a** to hold the anchorage device on that side, the head when the ribbon is attached lying on one side beneath the ledge **14** and on the other side beneath the lip **16a**, whereby it is held to the spool. The tongue **b3** of the head occupying the offset of the cavity prevents longitudinal shifting of the ribbon on the spool, as already described.

It is convenient to manufacture the spool separate from the shaft **20**, and separability enables the most satisfactory installation in the machine in which the spool is to be used. By extending the cavity **11** clear to the central bore for the shaft it is possible to make the spool in a more simple manner than if the cavity were machined from the cylindrical surface. If desired, I may make the spool as a die casting.

In Figs. 1 and 2, I have illustrated my spool and attached ribbon mounted in an addressing machine. The machine there shown comprises a bed **30** having a supporting portion **31** along which address plates, indicated at **32**, may be fed beneath confining ledges **33** by suitable reciprocating racks **34**. Extending across the region of such address plate is the inking ribbon **A** which on one side of the plate region passes across a turning plate of a bar **35** and thence passes directly to the spool **10** to which the end is attached, as described. On the other side of the plate region the ribbon is shown as passing across a turning member **36** and thence wound upon a hollow sheet metal spool **D** which is clamped between two heads **40** and **41**, the latter head being on a rod **42** which is pressed by a spring **43** toward the spool.

As shown in Figs. 1 and 2, the clamping head

**40** is on a shaft **45** which carries a ratchet wheel **46** in the same vertical plane as a ratchet wheel **26** on a spool shaft **20**. Between the wheels **26** and **47** is located some suitable ratchet driving mechanism indicated at **50** and which has a pair of ratchet pawls cooperating with the respective wheels and one or the other of them active at any time. Such driving mechanism may be of the type shown, for instance, in Patent No. 997,615, granted to The American Multigraph Company, and in that case whenever the ribbon becomes entirely unwound from one spool to which it is still anchored its resistance causes the shifting of the drive mechanism so as to operate the other spool to feed the ribbon in the reverse direction.

In such an embodiment as illustrated in Figs. 1 and 2, the spool **10** is a permanent part of the machine. The spool **D** is a hollow sheet metal member which may be sold with the ribbon wound upon it. Suitable plates **37** and **38** of the machine overlie the respective spools and are readily removable for installation or change of the ribbon.

In installing the ribbon, the rod **42** is pulled out by means of its knurled head **44** against the action of the spring **43** and the spool placed between the heads **40** and **41** and retained therein by a shoulder on the head **41** engaging a notch in the spool, as indicated at **48**. The ribbon is then passed about the turning bar **36** and over the region along which the plates are fed about a turning bar **35**, and the head **B** on the free end is passed through the slot **12** of the spool **10** and the attachment completed by pressing the tongue of the head into the lateral notch of the spool cavity.

When the feeding mechanism of Figs. 1 and 2 is operated it turns the spool wheel **26** so as to wind up the ribbon onto that spool, the ribbon gradually passing off of the other spool until it is completely unwound therefrom. When completely unwound the tension thus given to the ribbon by reason of its attachment to the spool **D** causes a shifting in the ribbon feeding mechanism so that it swings over and winds up to the spool **D**, the spool **10** being released.

It will be seen that by making the spool **10** a permanent part of the machine formed to cooperate with the anchorage device, while the spool **D** is a light sheet metal member to which the end of the ribbon may be permanently attached in any manner, I provide a very ready method of marketing the ribbon. After the inked ribbon has been manufactured, the end thereof is attached in the factory to the sheet metal spool **D**, the head attached to the other end, and the ribbon wound up around the spool, as illustrated in Fig. 12. When wound, the head lies closely against the ribbon and allows the ribbon to be put into a small container and sold in wound-up condition, ready for installation.

When the ribbon is to be removed from the machine, the freeing of the spool **D** by drawing out the rod **42** allows the sheet metal spool to be removed; then the anchorage is freed from the permanent spool **10** and the loose portion of the ribbon wound about the spool **D**, leaving the ribbon in convenient condition for return for re-inking, if desired.

The hollow sheet metal spool **D** may be made in any convenient form and the ribbon permanently attached thereto, as desired. I find it very convenient, however, to employ the characteristics set out in Patent No. 1,727,882, granted to Addressograph Company, wherein the sheet

metal spool is a single sheet of metal bent into a suitable form with adjacent free edges which are turned inwardly and flanged to overlap each other within the spool. These free edges may be locked together by a longitudinally slitted small metal tube which is slid lengthwise of the spool over the intumed flanges and binds them together, as illustrated at E in Fig. 12.

I claim:

1. A spool having a cavity and a slot connecting it with the exterior, the edge of the slot on one side registering with the side wall of the cavity, the edge of the slot on the other side overhanging the cavity to provide a ledge, a lip at the surface of the spool leading from the side of the cavity where the wall registers with the slot and projecting circumferentially toward the opposite side of the cavity, there being a recess in the body of the spool intersecting the ledge and extending opposite the lip, combined with a ribbon having a head with an intermediately located offset therein and a tongue extending from the offset, the offset coacting with the lip of the spool and the tongue of the head coacting with the recess of the spool.
2. A spool formed for attachment of a ribbon thereto comprising a cylindrical body having an internal cavity longitudinal of the spool and a longitudinal slot at the cylindrical surface of the spool forming an entrance to the cavity, the spool having a short lateral notch communicating with the slot and with the cavity independently of the slot and a lip on the opposite side from the notch and overhanging the cavity.
3. A spool formed for attachment of a ribbon thereto comprising a body having a longitudinal cavity communicating with the exterior at the surface of the spool by a longitudinal slot and a lateral notch formed in the body of the spool in an intermediate location communicating with the cavity, the body of said spool forming a base for the notch, the notch base having its portion adjacent the cavity at an angle of more than 180° to its portion adjacent the exterior of the spool.
4. The means for anchoring a ribbon to a spool comprising a head extending along the end of the ribbon, said head being comparatively wide and thin and intermediately attached to the ribbon to project away from each face thereof, after the manner of the top arms of a letter T and having a laterally projecting intermediately located tongue.
5. The combination with a ribbon of an attaching device therefor comprising a bar which is embraced by the end of the ribbon and a head extending lengthwise of the bar and having flanged edges which extend across the ribbon at the edges of the bar and are bent down onto the ribbon on the far side of the bar.
6. In a device of the character described, the combination of a spool having a longitudinal slot with a lateral extension, both communicating with an internal longitudinal cavity which is wider than the slot, and means for attaching a ribbon to said spool comprising a head secured to and extending across the end of the ribbon and with the exception of its tongue narrower than the width of the cavity and adapted to be passed through the slot into the interior of the spool and thereafter extend across the slot on the interior, said head having a tongue occupying the lateral extension when the ribbon is attached.
7. A ribbon spool comprising a solid cylindrical body, an axial shaft on which the same is mount-

ed, a cavity within the body of the spool extending along the exterior of the shaft, a ledge on the spool overhanging the cavity at one side thereof to leave a slot through the spool narrower than the cavity and communicating therewith, a lateral recess leading from the cavity and open at the outside surface of the spool, a ribbon and means for attaching it to the spool comprising a head thereon thin enough to be passed through the slot and broad enough to thereafter lie behind the ledge at one side of the slot, said head having a tongue adapted to occupy the recess.

8. A ribbon spool having a cavity and a slot along the spool surface communicating therewith, a lateral recess leading from the cavity and open at the outside surface of the spool, the outer portion of the recess having its base diverted away from the plane of the inner portion of the base, a ribbon and means for attaching it to the spool comprising a head thereon adapted to be passed through the slot, said head having a tongue adapted to occupy the recess, and overhang the clearance space above the base of the recess to enable the ready engagement of the tongue for disconnection of the head from the spool.

9. The combination of a spool having a longitudinal cavity and a slot therefrom to the exterior, a lip carried by the spool projecting part way over the cavity, a ribbon and means for attaching it to the spool comprising a head secured to the ribbon and extending across its end thin enough to be passed through the slot into position underlying the lip, said head being offset in a region corresponding to that of the lip in the spool.

10. A spool having a cavity and a slot leading from the cavity to the exterior of the spool, a lip on one side of the slot overhanging the cavity, an extension of the cavity on the side opposite the lip and in general registration with such lip, combined with a ribbon having a head in the interior of the spool bridging the slot, said head being thin enough to enter the slot and having an offset region adapted to coact with the lip of the spool on entering and having a tongue occupying the lateral extension of the spool cavity.

11. The combination of a spool having a cavity and a slot leading from the cavity to the exterior of the spool, a ledge on one side of the slot overhanging the cavity, a lip on the other side of the slot, an open extension of the cavity on the side opposite the lip and in general registration with such lip, an inking ribbon, and means for attaching the ribbon to the spool, a head secured to the ribbon and adapted to be passed through the slot and thereafter be positioned behind the ledge and lip, said head having an offset region adapted to coact with the lip of a spool on entering and having a tongue adapted to enter the lateral extension of the spool cavity.

12. The combination of a spool having a cavity, a slot narrower than the cavity extending to the exterior of the spool from the cavity to leave ledges at opposite sides of the slot overhanging the cavity, an intermediately located lip extending from one of the ledges crosswise of the cavity, means for attaching a ribbon comprising a head adapted to extend along the end of the ribbon and offset intermediately, the head being adapted to be passed through the slot with the recessed side of the offset portion coacting with the lip of the spool.

13. The combination of an inking ribbon, a head therefor secured intermediately to the end

of the ribbon, whereby the head may project away from each face of the ribbon, said head being intermediately offset from the general plane of the head.

- 5 14. The combination of a ribbon, a head therefor secured intermediately to the end of the ribbon, whereby the head may project away from each face of the ribbon, said head being intermediately offset from the general plane of the head and a tongue extending from the offset portion of the head.

- 10 15. A spool formed for attachment of a ribbon thereto comprising a body having a central bore and an internal longitudinally extending cavity narrower than the bore with an overhanging ledge restricting the entrance to the cavity, and a lateral notch open to the exterior and communicating with the cavity.

- 15 16. A slotted spool having a longitudinal open cavity with a centrally located lateral notch communicating with the slot and cavity and a central lip on the opposite side from the notch overhanging the cavity.

- 20 17. The combination of a spool having an internal cavity open along the spool and with a lateral open extension communicating therewith, a ribbon, and means for attaching the ribbon to the spool comprising a head secured to the ribbon and adapted to be passed radially into the interior of the spool, and with the exception of its tongue, narrower than the width of the

cavity, said head having a tongue occupying the lateral extension when the ribbon is attached to the spool.

18. The combination of a spool having a longitudinal cavity, a longitudinal slot connecting said cavity with the exterior of the spool, there being an overhanging ledge along one side of the slot, a lateral recess in the spool located centrally thereof and communicating with said cavity and opening to the outside of the spool on the opposite side of the slot from the ledge, a ribbon and means for attaching the ribbon to said spool comprising a head on the ribbon which is thin enough to be passed through the slot and broad enough to lie behind the ledge, said head having a tongue adapted to occupy the lateral recess.

19. The combination of a spool having an internal cavity and a slot through the spool surface forming an entrance to the cavity and an open lateral extension communicating with the slot, a ribbon adapted to be wound on the spool and having a portion extending through the slot into the cavity and a head on the ribbon thin enough to be passed through the slot into the cavity and narrow enough so that the head, with the exception of the tongue, may occupy the cavity and extend crosswise of the slot to attach the ribbon to the spool, said head having a tongue occupying the lateral extension of the spool.

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